

Engine Investigation

Allison Model 250-C30M Engine CAE 890562M

MD 369FF

Registration: N530KD



Rogers Helicopters South of Chalmers, IN

David W. Riser

David W. Riser Senior Air Safety Investigator

Accident date: March 14, 2017 Investigation date: March, 15, 2017 Report date: August 14, 2017 **Report Enclosures:**

Report Narrative

Appendix A, Photographs On-Site

Appendix B, Engine Records

Background Information:

On March 14, 2017 at approximately 15:46 hours local time, an MD 369FF, operated by Rogers Helicopters and powered by an Allison M250-C30M crashed into a field on the Northwest corner of County Roads 700S and 150E in White County, Indiana.

The aircraft was operating as a power line support aircraft and was engaged in pulling high tension power lines when witnesses observed the helicopter pitch backward following which guide lines were observed becoming entangled in the main rotor and tail rotor following which the helicopter fell and impacted the ground. The pilot who was the sole occupant received fatal injuries.

The NTSB IIC requested technical assistance from the engine manufacturer for the investigation. Rolls-Royce provided an Air safety Investigator for an examination of the wreckage which occurred at the accident site on March 15, 2017.

Airframe Observations On-Site:

The helicopter was positioned on its left side. The tail boom had separated between the attaching point and the tail rotor gear box and was positioned approximately ten feet north and adjacent to the fuselage. The tail rotor gear box remained attached with one of the two tail rotor blades fractured off approximately mid span. All five main rotor blades had fractured off at or near the hub. The left side fuselage displayed impact and crush damage. The majority of the forward fuselage and passenger compartment was destroyed. (Fig 1)

Engine Examination On-Site:

On March 15, 2017 an onsite wreckage examination was conducted under the auspices of the NTSB IIC with the following facts being noted.

- The engine remained securely attached to the airframe with the engine mounts remaining intact. The main drive shaft had fractured at the flex coupling forward of the freewheeling unit. (Fig 2)
- N1 drive train continuity was confirmed by manual rotation of the compressor rotor with resultant rotation at the starter generator pad.
- N2 drive train continuity was confirmed by manual rotation of the stage four turbine wheel with resultant rotation at the power take off pad.
- The accessory gear box was in normal position and was visually undamaged. (Fig 3)
- The turbine module was visually normal and displayed no damage. The exhaust collector support was undamaged and visually normal. (Fig 4)
- The outer combustion case exhibited minor external scratches. Both left and right side compressor air discharge tubes were in proper position and properly seated. The left side compressor air discharge tube displayed impact and minor crush damage as did the left side of the horizontal fire shield. The right side air tube was visually normal and undamaged. (Fig 5)

- All engine fuel lines, pneumatic lines and oil lines were visually and tactilely examined. One
 fuel line at the fuel control displayed minor impact damage with the balance of lines being
 visually normal. All "B" nuts were at least finger tight with no evidence of leakage.
- The fuel control unit, power turbine governor were in position, undamaged and visually normal. The power turbine governor arm was manually free and smooth from stop to stop. The fuel control arm could be manually actuated from stop to stop. (Fig 6)
- At the conclusion of the on-site engine examination, other than minor impact damage to the left side compressor air discharge tube and horizontal fire shield no engine damage or anomalies were noted.

Engine Information:

An Allison M250-C30P gas turbine engine, S/N CAE 890562M, powered the helicopter. Engine log records reflect the engine was last installed on the air frame September 16, 2009 at 14762.3 ETT. No recent major maintenance events or major component changes were noted in log records.

Manufacturer Allison Engine Model 250-C30M

Rating: 650 Shaft Horsepower

Serial Number CAE 890562
Engine Total Hours 17262.9
Last 150-Hour Inspection Unknown
Last 300-Hour inspection Unknown

Component	Serial Number	Part Number	TSO	Total Time
Engine	CAE 890562	23009300	15433.6	17262.9
Gearbox	CAG 97598	23035179	New	8301.5
Compressor	CAC 90814	23051643	11274.0	16394.4
Turbine	CAT 92515	23035128	284.8	17597.6
Fuel Control	334155	23070613	2156.1	Unknown
Governor	BR39546	23070613	1104.7	Unknown
Fuel Pump	T300480	6896810	2939.5	Unknown
Fuel Nozzle	1VL04786	23077067	3526.6	5391.9
Bleed Valve	FF36577	23073353	~284.8	Unknown

Summary of Findings:

- On site engine examination revealed nothing which would have precluded normal engine operation.
- Video of the accident sequence supports the engine was maintaining power throughout the accident sequence.

Appendix A, Photographs On-Site





Helicopter on Site









(Return)





Engine on Site







Fracture at Drive Shaft Coupling (Return)



Accessory Gear Box (Return)



Turbine Module
(Return)

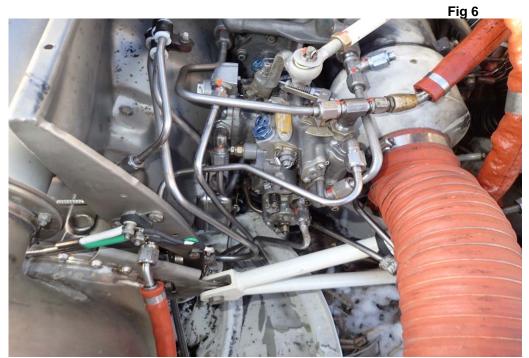


Left Side Outer Combustion Case and Air Tube



Right Side Outer Combustion Case and Air Tube

(Return)



Fuel Control with Associated Fuel Lines



Power Turbine Governor and Associated Pneumatic Lines

(Return)

Appendix B, Engine Records

			Engin	e Accessori	es	Part VI		olls-i
Engine Serial Numbe	r _CAE-	89056	25	Eng	ine Model_	Page N	No18	
	0				alled.		oved	
Nomenclature		art mber	Serial Number	Date	ENIGITSO	Date	ENGTT	Re
* Turbine	23035	128	CAT-97515	ENG: 14762 01SEP09	0.0	11-25-15	17312.8	Du
* Fuel Nozzle	230770	067	VN1PV07633	ENG: 14762	3 UNK	1-7-16	1940.5	Due Due
*Bleed Valve	230733	353	FF 289187	ENG: 14762.	0.0	1.12.15	1974.2	DUE
* Governor	230651			01SEP09 ENG: 14762.	0.0 UNK	3.26.14	15401.6	C/u
*Fuel Control	230706			01SEP09 ENG: 14762.3	542.7 3079.5		1682.0	TROL
			84140048	01SEP09 ENG: 14762.3	0.0	10.24.11	913.8	1
Gearbox	230351	179	CAG-97598	OISEPO9 ETT	TSN		15106.8	
FUEL CONTROL UN	IT 2307	0613	332238	10/22/11	2296.2	20 JAN 12	13277.5	
*FUEL CONTROL	230706	513	334155	20 JAN 12	15,106.8 TSO: 0.0			
*P.T. GOVERNOR	2301	,5125	BR 39546	3.26.14	159066			
							The second second second	1
*Bleed Valve	23073	3353	Management of the Real	I-12-15	RD	ccessory times rec		ccessor
* Bleed Valve 57-2786C (6/01) (11-2786C (6/01) (5/05) (F)			SERV	VICE RECO	PD LY			ccessor
* Bleed Valve 57-2786C (6/01) (11-2786C (6/01) (5/05) (F)	ber <u>CA</u>	E- 8905625/	SERV	VICE RECO	o-o Individual a		Part I Page No. 3	ccessory
* Bleed Valve T-2786C (6/01)		E- 8905625	SERV	CICE RECO	RD LY	250-C30M	Part I 3 Page No. 3	
* Bleed Valve T-2786C (6/01) F-2782A (5/95) (F) Engine Serial Num Date	INSTA VC S/N Reg. #	E- 8905625	SERV ENGII	CICE RECONE ASSEMB Engi	RD LY	REMOVED Total	Part I 3 Page No. 3 Moderat	eason
* Bleed Valve 17-2786C (6/01) F-2782A (5/95) (F) Engine Serial Num Date A	insta	E- 8905625/ LLED Eng	SERV ENGII	CICE RECO	RD LY	250-C30M REMOVED	Part I 3 Page No. 3 Page No. 4	eason
* Bleed Valve 17-2786C (6/01) F-2782A (5/95) (F) Engine Serial Num Date A 17/04 20 17/24	INSTA VC S/N Reg. #	E- 8905625/ LLED Eng Since OH	SERV ENGII	CICE RECONE ASSEMB Engi	RD LY Individual a RD LY Engir Since OH	250-C30M REMOVED Total 10, 740.4 12, 728.1	Part I Page No. 3 Moderat Turbon D Olit	eason
* Bleed Valve 17-2786C (6/01) F-2782A (5/95) (F) Engine Serial Num Date A 17/04 4/17/05 20 17/105	INSTA VC S/N Reg. # 87 15845 87	E- 8905625/ LLED Eng Since OH 6947.7	SERV ENGII	ICE RECONE ASSEMB Engi Date 4//5/05	RD LY Individual a RD LY Ine Model Engir Since OH	250-C30M REMOVED Total 10, 740.4 12, 728.1	Part I Page No. 3 R Moderal Trulon D I Sep 136	leason L
* Bleed Valve 17-2786C (6/01) F-2782A (5/95) (F) Engine Serial Num Date Ali7/04 4/17/05 4/2/06 1/2/05	INSTA VC S/N Reg. # 27 28845 RLE CZEW 197	E- 89056257 LLED Eng Since OH 6947.7	SERV ENGII	Date 4//5/05 4//3/04	RD LY ne Model Engir Since OH 8911_1 10,878-8	250-C30M REMOVED Total 10, 740.4 12, 728.1	Part I Page No. 3 R Moderal Trulon D I Sep 136	leason chi
*Bleck Valve 17-2786C (6/01) Alliant -2782A (5/95) (F) Engine Serial Num Date A A	INSTA VC S/N Reg. # 27 28845 Reg. # 27 28845	E- 8905625/ LLED Eng Since OH 6947.7	SERV ENGII ine Time Total 8777.0	Engi Date 4//5/05 4//3/04	RD LY ne Model Engir Since OH 8911_1 10,878-8	250-C30M REMOVED Total 10, 740.4 12, 728.1	Part I Page No. 3 Moderal Trulon D ONE CSPO 136 HHY JE Tr. MG	eason L
* Bleed Valve 17-2786C (6/01) F-2782A (5/95) (F) Engine Serial Num Date Ali7/04 4/17/05 4/26/06 8/8/17	INSTA VC S/N Reg. # 87 88805 HUE 7640 87	E- 8905625 LLED Eng Since OH 6947.7	SERV ENGII ine Time Total 8777.0 19,740.4 12,728.1 14374.3 14480.5	Date VISIOS 4/13/06 3/18/06	RD LY ne Model Engir Since OH 8911_1 10,878-8	250-C30M REMOVED Total 10, 740.4 12, 728.1 14480.5 14762.3	Part I Page No. 3 Page No. 3 Page No. 3 Product Today D Olk Esse 136 HMM In Mi	leason Latine
* Bleed Valve 17-2786C (6/01) F-2782A (5/95) (F) Engine Serial Num Date A/17/05 4/17/05 4/26/06 8/8/8/7 1-10-08 W 8	INSTA VC S/N Reg. # 87 88845 REG. # 87 88845 REG. # 87 88845 REG. # 87 88845 REG. # 88845	E- 8905625/ LLED Eng Since OH 6947.3 89.11.1 10898.5 12545.0 12651.2	SERV ENGII ine Time Total 8777.0 10,740.4 12,728.1 14374.3 14480.5	Date VISION 1000	RD LY ne Model Engir Since OH 8911_1 10,878-8	250-C30M REMOVED Total 10, 740.4 12, 728.1 14400.5 14762.3	Part I Page No. 3 Page No. 3 Product Turkey D Olk ESSE 136 HHWA I- ME CANON SOLL	eason classes
* Bleed Valve 17-2786C (6/01) F-2782A (5/95) (F) Engine Serial Num Date Ali7/05 4/17/05 4/26/06 8/8/17 1-10-08 88 9/8/17 1-10-08 88	INSTA VC S/N Reg. # 27 28845 Reg. # 27 28845	E- 89056257 LLED Eng Since OH 6947 8°11 108°78.5 12545.0 12651.2	SERV ENGII ine Time Total 8777.0 10,740.4 12,728.1 14374.3 14480.5	Date VISIOS 4/13/06 3/18/06	Engir Since OH 8911, 1 10,878-8 12651.2	250-C30M REMOVED Total 10, 740.4 12, 728.1 14400.5 14762.3	Part I Page No. 3 Reproduct Of He See 136 Herry Stell Convienence	eason Character

Nomenclature	gine Serial Nu	mber <u>CAE-</u>	89050		Asseml Engine	Accesso	ries	Model _	Pa Pa 250- c-34		R R	olls-Royc
Number Number Number Number Date ENGTT Date ENGTSO ENGTS ENGT	Nomenclatur	Pa Pa	rt	-							wad	T
Final Pump 699 810 Final Coales 20070 613 337/49 624667 824667 82566 824 824 825 825 825 825 825 825 825 825 825 825	- Tomerica (di	Num	ber				8	NG TT			ENGTT	Reason
	Fuel Pump	689681	0	Tama:	C Assets	N. Charles and St. Co.	w	1k	2/21/07	-		
2305124 3205	Fuel castol		PART	1	1	1/13/06	8 241	660-7 K		Heat	299.5.6 UNK	
23065726 23045726	Bleedvalus	230733	53		220 1	1/25/00	Lu		144060	,	Description of the last of the	Convienenc
Convert Conv	- 1	2306512	6	THE REAL PROPERTY.	11	137/07	0 0	UK UK			847.3 UNK	"
Search S	Elpins				2	121/07	-40	UK.			542.7	Convert
Searbox 23035181 CAG-90127 Eng: 14374,3 16494,4 18AUG09 16872,4 16872,4 16872,4 16872,4 16872,4 16872,4 16872,4 16872,	ELNOTTE				11	10157	UA	1K	14AUGOS	,	UNK 580 7	Convigano
Sale	Dearbox	2303518	1	CAG-9012	7 En	ng: 14374. 15AUG07	3 1648 547	34.4 78.4		, -	16872.4	
Compressor 23051643 CAC-90814 15A(G07 1299.2 015EP09 1687.2 Overhaus 1786C (6/01) TRANSFER RECORD TRANSFER RECORD TRANSFERRED / SHIPPED TRANSFERRED / SHIPPED TRANSFERRED / SHIPPED Transferred To		2305164	3	CAC-9081	4	15AU907	839	5.4			8491.6	Repair
TRANSFER RECORD Part II Page No. 3					5	15A (507	129	9.2	Olsepo9	1		overhau!
### Part II Page No. 3 Part II Page No. 3 Page No. 3		Localida		UNU-30014	110	8 DEC 07			cessory times	recorde	ed on service acco	resory record card
Date		umber CAE-	34	TF	RANSFE				250-			
Since OH Total Date Since OH Total	THE PARTY	TRANSFERE	RED / SH	HIPPED		Maria Na				REC	EIVED	
18 DEC 07 AHGS Sunshipe Helicopters 12651.2 14480.5 6APR09 ASI Services Pacific 12933.0 14762.3 01SEP09 ASI Services Inter Island 12933.0 14762.3 18 JAN 13 ASI Services	Date	From		То				D	ate		Organizatio	on
6APR09 ASI Services Pacific 12933.0 14762.3 01SEP09 ASI Services Inter Island 12933.0 14762.3 18 JAN 13 ASI Services	14 AUG 07	AHGS	Will S	quyres	12545.0	14374	.3					
6APR09 ASI Services Pacific 12933.0 14762.3 01SEP09 ASI Services Inter Island 12933.0 14762.3 18 JAN 13 ASI Services	18 DEC 07	AHGS	Sunshi	ne pters	12651.2	1448	0.5					
OISEPO9 ASI Services Inter Island 12933.0 14762.3	6APRO9	ASI Services			12933.0	0 1476	2.3		. 22	07 0	August man	
					The second secon	NAMED IN COLUMN 2 IN COLUMN 2 IN COLUMN 2		18 JAN	1 13 A	SI S	ervices	

			Assembly			Rolls-	Royce	
					Part V Part No. 19			
Com	pressor Serial N	Number CAE- 8905		Installed	Engine Mode	1 250-	Removed	
	Nomenclature	Part Number	Serial Number	Date	-ENG TSO	Date	ENG TT ENG TSO	Reason
Fu	d Nozzle	23077067	1VLØ 4786	1-7-16 BHGTT: 137365	10157	ar r		
Tur	rbine	23035128	CAT-97521	11-25-15	196.9	4-21-16	11645.1	Return Rental ETT: 16978.1
	rbine	23035128	CAT- 92515	04-21-15	17312.8			
		100						
		ALC: NO						
3					_	-		
F-278	ISAT (7/03)		mbly Record			R Rol	ls-Royce	
F-278	5AT (7/03)		mbly Record ne Assembly		Part V		ls-Royce	
		Engi	ne Assembly		Part V Part No Engine M	20		
	ompressor Seri	Engi	0562	Installed	Part No Engine M	20 odel 250-	Removed	Reason
Ca		Engi	ne Assembly		Part No Engine M	20 odel 250-	Removed	Reason
Ca	ompressor Seri	Engi	0562		Part No Engine M	20 odel 250-	Removed	Reason
Ca	ompressor Seri	Engi	0562		Part No Engine M	20 odel 250-	Removed	Reason
Ca	ompressor Seri	Engi	0562		Part No Engine M	20 odel 250-	Removed	Reason
Ca	ompressor Seri	Engi	0562		Part No Engine M	20 odel 250-	Removed	Reason
Ca	ompressor Seri	Engi	0562		Part No Engine M	20 odel 250-	Removed	Reason
Ca	ompressor Seri	Engi	0562		Part No Engine M	20 odel 250-	Removed	Reason
Ca	ompressor Seri	Engi	0562		Part No Engine M	20 odel 250-	Removed	Reason
Ca	ompressor Seri	Engi	0562		Part No Engine M	20 odel 250-	Removed	Reason
Ca	ompressor Seri	Engi	0562		Part No Engine M	20 odel 250-	Removed	Reason

Part 1 SERVICE RECORD GEARBOX ASSEMBLY GT 2782C-1 (9-83) Engine Model 250- c30 Gearbox Serial Number CAG-97598 REMOVED INSTALLED Gearbox Time Gearbox Time A/C or Eng. S/N Reason Since OH Date Since OH Total Owner Date M.I.O. NEW 52.3 900098 0.0 5-6-91 NEW 9-30-86 M.I.O./UPDATE NEW 66.9 03/02/92 52.3 CAE900038 NEW JUN 21 '91 INSPECTION NEW 190:24 03/12/93 NEW 66.9 CAE90098 TECNO TURBINAS 04/03/92 Convenience 227.6 7-27-95 New 190:24 CAE900098 NEW AGT - GMC 04/05/93 Convenience 235.6 227.6 9/19/95 New New 890802 8-5-95 235.6 900098 New 9/19/95 RECORD TIME 562.8 235.6 10-12-98 NEW 0.0 HELIPET Stoogs A 5/23/98 nerm 1925.6 8/2/01 562.8 NEW 900098 10-12-98 BOEING Making Metal 1939.4 New 1925.6 3-8-02 No 900098 DMNI 8/22/01 Embody CEG 3217 1946.9 1939.9 New New 90098 CMNI 3-13-02 19469 890351 NEW CORBET 11.18.03



SERVICE RECORD GEARBOX ASSEMBLY

Part I Page No. 2

Gearbox Serial Number CAG- 97.598

Engine Model 250- C30

	INSTA	LLED	REM	OVED	
Aircraft S/N	Date	TT	Date	TSO	Reason
OGOZFF 900098	Feb. 13, 03	1946.9 new	7/2/03	1997.8 nau 3800.3	Self Destruction/Meta
349-0600FF 890361	11.18.03	1999.8 NEW 3800.3	2-25-05	3902.0	Oil Consumption/Beatler
890351	25-Apr-2006	NEW 3802.0 nEW	02-13-2008	5800.9 TSN	OIL LEAK
CAE-890562	01SEP09	5800.9 TSN	4.630		5.02,03 -000

Turbine Serial Number CAT- 97515

Engine Model 250-

C30

Part I Page No.

REMOVED

=

TURBINE ASSEMBLY

INSTALLED

DOUBLE WILL FOLK FOR STATE OF 1. 300 ALTER TO STATE OF STATE OF 1. 1992 OF 1.

Aircraft S/N Engine S/N

9-1- 2009

15372₀3

1.52.12 | 1.52.12 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.13 | 1.52.1

LIGHT THAT SEND BY LEGAL STATE OF THE STATE

Date

	Cruise C	Cruise B	Cruise A	Normal Cruise	Max Cont	2 ½ Min	
	0	0	0	1282	1368	1424	
	0	0	0	634	723	779	
	334	418	501	557	650	700	
/R	0	0	0	13.8	11.2	11.3	
	0.689	0.64	0.61	.0.581	0.569	0.564	
	0.719	0.665	0.624	0.607	0.592	0.588	
0	-4.1	-3.7	-2.3	-4.3	-3.9	-4,1	
11			2 (1 2 (2015	2 /2 2 /2025	2/12/2016	2/12/2016	
5	2/12/2016	2/12/2016	2/12/2016	2/12/2016	2/12/2016 6:06:54 PM	2/12/2016 6:12:37 PM	
M	5:46:57 PM	5:54:19 PM	5:57:25 PM	5:58:53 PM		Idle Before Shutdo	20145
PO	4th Power Po	Stn Fower Fo	oth rower re	27th rower ro	Elia dii consi		
139	49434	50740	51636	51913	45769	32116	_
6.4					89.7	63	
866				52755	46512	46512	
585					30594	21625	
9.8				99.9	99.8	70.6	
7.0	-						
71.4	488.3	566.6	611.1	624.9	317.4	34.8	
72.5			611.8	625.4	318.5		
016		The second secon	602	1 6024	6018		
10.1		648.5	699.9	715.9			_
76.3		91.4	98.4	100.6			_
70.5		684.9	738.	755.4	386.1	386.1	_
					-	7 47	-
54	51	49					
16.2		365.5					_
38.4							_
932	0.588	0.5719		_			_
11	1 11.	1 11.		-			
3.42	-3.4	1 -3.4	-3.4	1 -3.4	-3.4	-5.44	
			20.0	5 28.8	5 28.8	7 28.94	
8.8					-		
8.9					-		
8.9			-			4.0.00	
43.9	9 43.				-		

Rogers Helicopters, N530KD, Engine M250-C30M, S/N CAE 890562M --- March 14, 2017

2

										N. P. San	
				EMBL					art V age No	2	
GT 2785D-1	(9-83)				ASSER						
Turbine Ser	ial Numbe	er CAT	- 9751	5	_	Engine	Model_	250- C301	,		
-				INSTALLED			REMOVE				
Nomenclature	Part Number	Serial Number	Date	Turbine Total	This Item	Date	Turbine Tot Time	This /lem	Reason	1	
3RD STG WHL	6898663	HX82200	02/02/95	3278.40	NEW	15JUN01	5750.1	2471.4 3586	O/H		
4TH STG WHL	6892764	HX63113	02/02/95	3278.40	NEW	15JUN01	5750.1	2471.4 3586	О/Н		
1st STG WHL	23053299	V1432C4	21 /411 00	519201	NEW		5750.1	558.1	О/Н		
			Section 1		NEW.		5750.1	558.1			
2nd STG VALL	23032280	10 FEET 1	22 TAU CO	5192	0.0	15JUN01	3730.1	500 1984.7	O/H		
			15JUN01	5750.1	0.0	30AUG02	7734.8	655 1984.7	O/H		
2ND STG WHL	23032280	CONTRACTOR OF THE PARTY OF THE	15JUN01	5750.1	0.0	30AUG02	7734.8	655	O/H		
3RD STG WHL	6898663	HX 93693	15JUN01	5750.1	0.0	30AUG02	7734.8	655	О/Н		
4TH STG WHL	23066744	HX 76974	15JUN01	5750.1	0.0	30AUG02	7734.8	1984.7	0/н		
	-	durantura		TO A	000000000000000000000000000000000000000	ante-province	-			and the same of th	3
				TURBI	NE ASS	EMBLY			Par	t IV je No. 8	
THE REAL											
Turbine Seria	Number .	CAT- 97	515	* 1		Engine I	Model _	250- C30			
											1
Date	Turbin	e Time			Remark				ature		1
	Since OH	Tot	THE REAL PROPERTY.						ate No.	Organization Action Aircraf	ŧ
9 Feb 16	0.0 CSO: 0.0	17312. TC: 1	Section 19 To 1	erhauled Tu			Charles and the second	A9UR626J		Engine Overhau	1
100 500	Care			H Manual 14 ted April 1			The second second second	1			1
	CO 618			nal measure			THE RESIDENCE OF THE PERSON NAMED IN				
710 May 19 19			THE RESERVE TO SERVE THE PARTY OF THE PARTY	Rotor: 2.3			Rein	(0)			
		100	The second second second	370" Stret		The second second second	h:				
100		1000			INTENANCE REI			78 9		100000000000000000000000000000000000000	
-				THE ENGINE AND/OR MISTER WAS REPAIRED/OWNTH CURRENT FEDER	OOULE IDENTIFIED OVERHAULED AND I	ABOVE OR ON THE	ORDANCE	1	74		1
1000		300		FOR THE RETURN TO ON FILE AT THIS AGEN	SERVICE, PERTINE ICY UNDER WORK	ORDER NO. A201	S WORK IS 152080	2			
THE RESERVE OF THE PERSON NAMED IN		OR THE RESIDENCE						MEDICAL STREET		The second second second	100
				No Perio	N. T. C.		1	ALL REAL PROPERTY.	May 10 PM	The state of the s	

ASSEMBLY RECORD TURBINE ASSEMBLY Part V 97515 Engine Model _250- C30 Page No. Turbine Serial Number CAT-INSTALLED REMOVED Turbine Component Turbine Component Part Number TT TT TT TT Date Date Nomenclature Serial Number CYCLES CYCLES CYCLES CYCLES 23053299 X588836 17312.8 1940.5 New 1537293 01SEP09 1st Stage Wheel 4 Dec 15 14640 2643 23032280 15372.3 New 17312.8 1940.5 X578936 11997 New 2nd Stage Wheel 4 Dec 15 14640 2643 M250-10227 17312.8 New New X618649 9 Feb 16 14640 #1 Wheel M250-10658 17312.8 New 9 Feb 16 14640 New #2 Wheel X617215 17312.8 6898663 New #3 Wheel X619597 9 Feb 16 14640 23066744 17312.8 New 9 Feb 16 14640 #4 Wheel New X632590 17312.8 TSO: 0.0 23073566 #1 Nozzle Shield 9 Feb 16 14640 CS0: 0 60061

ASSEMBLY RECORD TURBINE ASSEMBLY

Part V Page No. ___3

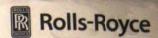
Turbine Serial Number

CAT-97515

Engine Model

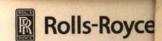
250-C30M

				INSTALLE	D	1	REMOVED		
Nomenclature	Part Number	Serial Number	Date	Turbine Total Time	This item	Date	Turbine Total Time	This Item TT Cycles	Reason
GP TIE BOLT		SL 4856	15JUN01	5750.1	FREE 7.381	30AUG02	7734.8		0/н
1ST STG WHL	No. of the last of	X 512478	30AUG02	7734.8	0.0	201/0/03	9717.8		T/X
2ND STG WHL	23032280	X 518532	30AUG02	7734.8	0.0	20N0V03	9717.8	1983.0 805	T/X
3RD STG WHL	6898663	HX	30AUG0	27734.8	1984.7 655	201101/03	9717.8		T/X
4TH STG WHL	23066744	93693 HX 76974	30AUG02		1984.7 655	20//0/03	9717.8		T/X
GP TIE BOLT					FREE 7.382	3 May 06	13685.1	5950.3	Overhaul
1ST NOZ SHL	023073566	SL10222	30AUG0	2 7734.8		01SEP09	Found pre		removed
1st STG WHEEL	Section 1	X513648	11FEB04	9717.8	0.0	14FEB05	11697.4	1979.6 746	
2nd STG WHEEL		X519390	11FEBO4	9717.8	0.0	14FEB05	11697.4	1979.6 746	



LIFE LIMITED PART NAME #1 Wheel			PART NUMBER 6898911				SERIAL NUMBER X97130		
Date Installed	Date Removed	Engine and Module S/N	Engine Model	Hours	Cycles	Overspee Events* (as app)		Comments	Signature And Certificate #
18 June 13		CAT-97521	C30	319.0	847				

^{*}For PT Wheel Overspeed Cycles, record event date and event maximum % no the Comments Line.



		LIFE	LIMI	TED	PART	LOG	CARD	4 7005		
LIFE LIMI PART NAM		eel	PART NUMBE	PART NUMBER ²³⁰³²²⁸⁰				SERIAL NUMBER HX86585		
Date Installed	Date Removed	Engine and Module S/N	Engine Model	Hours	Cycles	Overspee Events* (as app)		ments	Signatur And Certificate	
18 June 13		CAT-97521	C30	319.0	847					
				4						

^{*}For PT Wheel Overspeed Cycles, record event date and event maximum % no the Comments Line.

^{*}This card should accompnay the part when removed from engine or module.
GT-12017 (4-05)

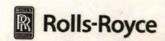
^{*}This card should accompnay the part when removed from engine or module. GT-12017 (4-05)



LIFE LIMI		PART NUMBER 6898663				SERIAL NUMBER 1565437		
Date Installed	Date Removed	Engine and Module S/N	Engine Model	Hours	Cycles	Overspee Events * (as app)	d Comments	Signature And Certificate #
1 007 07				0.0	0			
	THE REAL PROPERTY.							
		- 4						
					1			

^{*}For PT Wheel Overspeed Cycles, record event date and event maximum % on the Comments Line.

*This card should accompany the part when removed from engine or module.



PART NAME			PART 23066744				SERIAL X559055		
Date Installed	Date Removed	Engine and Module S/N	Engine Model	Hours	Cycles	Overspeed Events * (as app)		Signature And Certificate	
3) 001 07				0.0	0	500 to 500			
			No. of Lot						
		6.01					he Comments Line.		

^{*}This card should accompany the part when removed from engine or module. GT-12017 (4-05)

Approving National Avia Authority/Country.		A	UTHOI FAA Form	RIZED R	ELEASI	ECER	TIFIC	ATE	5. Work Order/Cor	001497	Number:
Organization H.E Name and Address: 627	R.O.S. Inc Ruberta Avenue; Glend	tale CA 91	201-2334		FAA Certii	ficate	100			77987	
Charles and the Control of the Contr			Par	n Number:	9. El	igibility: *	10. Quantity:	11. Ser	ial/Batch Number:	12.	Status/Work:
ltem: 7.	Description: SSY GAS PRODUCE	8. R-	23070613 (2549092-7)			N/A	1 EA		334155		OVERHAULED
3. Remarks: In accordance Item described in block 7 defined and authorized in Detailed work order infor TT: Unk	EAD AT 13 NOT FE	(W.	Servic	e Acces		cord		art I			ROS. A CRS HEFR202K
Certifies that	the work sp		Component Se			334155	E	ngine Mod		The second second	oycee 250 - C30 Series
14. Certifies the items iden		(d)		, l	nstalled				-	Removed	
Approved o	design data and arc		Date	Engine S/N	A/C S/N Reg. #	Since OH	. Time	Date	Accy. Ti	Total	Reason
Non-appro	ved design data spe-	(B)	1/20/12	CAE-890562 15106.8 ET	0044FF	0.0	Unk				
15. Authorized Signature		0									
17. Name (Type or Frinte	d):										
Block 1, it is essential to	performs work in account the user/installer en	(latic									
national regulations by FAA Form 8130-3 (5-01	the user/installer before	_	н	E.R.O.S., Inc. 627 Rul	berta Ave Glendale, C	A 91201 Ph	(818) 265 - 9730	/ Fax: (618) 26	55 - 9731 Internet her	osinc.com E-m	all into@herosinc.com
	6 6									-	-

- Andrea	Authority/Country:			AUTH FAA FORM	ORIZED 8130-3, AI	RELEAS RWORTH	SE CEF	RTIFICA	AL TAG		3. Form Tracking Number	er:
	HELICOPTER ENGINE REI	2.0	S. AUL SERVICES	627 R Glend	Juberta Ave. Jale, CA 91201 Certificate No.:		3				5. Work Orser/Contract/In Number: 140276	tvoice
001	Power Turbine Gove	ernor (250-	C30 Series)		65125		9. Quantit	y: 10). Serial Number	er.	11, Status/Work;	
2. Rem			201103)	230	00120		1	В	FR39226		OVERHAULED	
o	Certifies work spe	0	Servicomenclature:	e Access		ecord		Part I Page No.		Haucorus E	AA CRS HEFR202K	
ca. Cen	Certifies work spe tifies the terms is opproved design a	N	omenclature:	erial Number :	Power Tur		r Assy	an cour		Rolls-F	AA CRS HEFR292K 1 Royce 250 - C30 Series	
cosa. Cen	Certifies work spe	N	omenclature:	erial Number :	Power Turnstalled A/C S/N	BR39226	Time	Page No.	Accy.	Rolls-F	AA CRS HEFR292K 1 Royce 250 - C30 Series	
Sa. Cen	Certifies work spe tifies the terms is opproved design a	N C	omenclature: component Se	erial Number : Ir Engine SiN	Power Turnstalled A/C S/N Reg. #	bine Governo BR39226	or Assy	Page No. Engine Mode		Rolls-F	AA CRS HEFR202K 1 Royce 250 - C30 Series	
Sa. Cen	Certifies work spe tifies the terms in pproved design of ion-approved des	N C	omenclature: omponent Se	Ir Engine SiN	Power Turnstalled A/C S/N Reg. #	BR39226 Accy. Since OH	Time	Page No. Engine Mode	Accy.	Rolls-F	AA CRS HEFR202K 1 Royce 250 - C30 Series	
Sa. Cen	Certifies work spe tifies the terms it pproved design o ion-approved des	N C	omenclature: component Se	erial Number : Ir Engine SiN	Power Turnstalled A/C S/N Reg. #	BR39226 Accy. Since OH	Time	Page No. Engine Mode	Accy.	Rolls-F	AA CRS HEFR202K 1 Royce 250 - C30 Series	
C As Cen As No. 13b. As 13d. No.	Certifies work spe tifies the terms it pproved design o ion-approved des	N C	omenclature: component Se	erial Number : Ir Engine SiN	Power Turnstalled A/C S/N Reg. #	BR39226 Accy. Since OH	Time	Page No. Engine Mode	Accy.	Rolls-F	AA CRS HEFR202K 1 Royce 250 - C30 Series	
C C A A A A A A A A A A A A A A A A A A	certifies work spe tifies the terms it pproved design a ion-approved des introduced Signature fame (Typed or Pri	N C	omenclature: component Se	erial Number : Ir Engine SiN	Power Turnstalled A/C S/N Reg. #	BR39226 Accy. Since OH	Time	Page No. Engine Mode	Accy.	Rolls-F	AA CRS HEFR202K 1 Royce 250 - C30 Series	
C C A A C A A A A A A A A A A A A A A A	certifies work spe tifies the tems is pproved design o ion-approved des uthorized Signatur arms (Typed or Pri portant to understan the user/installer pe iai that the user/installer	N C	omenclature: component Se	erial Number : Ir Engine SiN	Power Turnstalled A/C S/N Reg. #	BR39226 Accy. Since OH	Time	Page No. Engine Mode	Accy.	Rolls-F	AA CRS HEFR202K 1 Royce 250 - C30 Series	
C C A A C A A A A A A A A A A A A A A A	Dertifies work spetitifies the Items is opproved design of ion-approved design of ion-appro	N C C	Date	erial Number : Ir Engine SiN	Power Turnstalled A/C S/N Reg. # N 530 K/D OO 14 FF	BR39226 Accy. Since OH 0.0	Time Total Unk	Page No. Engine Mode	Accy. Since OH	Rolls-F Removed Time Total	AA CRS HEFR202K 1 Royce 250 - C30 Series H Reason	

Rogers Helicopters, N530KD, Engine M250-C30M, S/N CAE 890562M --- March 14, 2017

			-			-		_		-	-	(0)						BASE OF THE PARTY		
			1/10/08	02/21/07 04/21/07		20 7240	Date			Component serial number	Nomenclature	Service	FA	Authority/C	Civil Aviation Country: D STATES ne and Address:		AUTHORIZ A FORM 8130-			
			CAR- 8905W	CAE-890562	CAE-8901968	#	Engine S/N			erial number		Service Accessory Record	6. Item	HELICOPTER 7. Descrip	ERCENGINE REPAIR OVERHITION:	S. HAUL SERVICES	627 Ruberta A Glendale, CA FAA Certificate 8. Part Num	91201 USA No.:		
T	1	T	2 10	2 2	1.1	1			Installed			9	001	Bleed Val	ve Assembly (Series	s IV)	23073353			
			Walley Ollied	M.3 +8/	CGFF(-	#	A/C S/N	d		FUEL PUMP	y Rec	12. Remarks: Manual ID: 14W3 Sec 75-10-02, Revision #: 20, Revision Date: 4/1/2014 Article described in block 7 & 8 was Inspected, Overhauled & tested using methods and procedures and Standard Shop Practices. Work Order Inspection Report is attached to the described in Block 7 & 8 in relation to the work being certified per Order 8130.21H Chapte							
			205.3	25.3	0.0	9		Accy		T300480	JMP	ord	5		TSO: 0.0		ormed By: 0060103	THIS IS		
			wa*	UNK	UNK		Total	Time						Certifies wor	rk specified in Blocks	s 11/12 was carried o	out in accordance with	EASA part 145, and 145 Approval Nun		
	The second			477 14480.5	2354165	alrana	Date							Approved de		were manufactured in a condition for safe of the safe		CCF		
1				205.3	25. 3	9	Since	Accy.		Engine	Part I Page No		13b.	Authorized S	lignature:	13c. Approva	Authorization No:	14		
	100		- 7	war.	u/n			-	Removed	Engine Model	0.		13d.	Name (Type	d or Printed):	13e. Date (de	d/mmm/yyyy):	14		
N. W.					2	-			Ver	N		20 E						User/Installer Res		
		The state of the s			Were 8901963		Reason			250- c30		Rolls-Royce	Wheresser States regula	the user/intial that the	staller performs work user/installer ensure ks 13a and 14a do n user/installer before	k in accordance with es that his/her airwort	ment alone does not a the national regulation hiness authority accep tion certification. In all flown.	s of an airworthinest its aircraft engine(s)		

